0015086

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle WA 98101
Alaska
Idaho
Oregon
Washington

EPA

July 15, 1991

9103432

Reply To
Attn Of: HW-074

Willis Bixby
Deputy Manager
Environmental Management and Projects
U.S. Department of Energy
Richland Operations Office
P.O. Box 550, A7-50
Richland, Washington 99352

Re: Action Memorandum Approval: 316-5 Process Trenches, U.S. Department of Energy (DOE) Hanford Site, Richland, Washington

Dear Mr. Bixby:

This letter constitutes approval of the subject Action Memorandum. Public comments were required and received although none affected the proposal plan. Therefore, we approve this plan.

I: PURPOSE

The purpose of this action is to mitigate the threat to public health and the environment caused by contaminant migration from the sediments in the process trenches to the soil column, groundwater, and Columbia River. The action is an interim action pending the final cleanup activities associated with the 300-FF-1 operable unit.

II. BACKGROUND

Pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the U.S. Environmental Protection Agency (EPA) proposed the 300 and 400 Areas (the 300 Aggregate Area) at the U.S. Department of Energy (DOE) Hanford Site for inclusion on the National Priorities List (NPL) on June 24, 1988. In November 1989, the 300 Aggregate Area was included on the NPL.

A. Site Description

A cluster of radioactive mixed waste sites is located within the 300 Aggregate Area. The 300 Aggregate Area has been further subdivided into five operable units, including 300-FF-1. The 300-FF-1 is known as a process liquid operable unit because it contains all of the liquid waste disposal facilities within the 300 Area (WHC 1989a).

The 316-5 Process Trenches are an active treatment, storage, and disposal (TSD) facility under the Resource Conversation and Recovery Act of 1976 (RCRA) within the 300 Area of the Hanford Site operating under RCRA Interim Status. The trenches are located near the western boundary of the 300-FF-1 operable unit approximately 300 m (1000 ft) west of the Columbia River and 1 mile north of the City of Richland in Benton County. The two trenches are approximately 1500 feet in length, 11 feet deep, 30 feet wide at the top, and 10 feet wide at the bottom and are separated by an earthen berm. There is a lake at the north end of the west trench which had been an active part of the trench from 1975 to 1990 when it was separated from the trenches by an earthen berm. The trenches are unlined and were designed to allow effluent water to percolate through the soil column while filtering out contaminant particulates.

The process trenches were constructed and activated in 1975. Process liquid effluent from various locations within the 300 Area is collected in the process sewer and transferred to the trenches via the concrete inlet weir box located in the south end of the trenches. The trenches receive effluent discharge alternately, allowing one trench to "dry out" while the other is in use. The discharge to a trench was switched when the water level reached operational capacity. Historically the trenches received effluent discharges of 1200 gal/min. Peak discharges may have been as high as 3,000,000 gal/day. The process sewer system is currently connected to 45 buildings in the 300 Area. In addition to fuel fabrication process water, the sewer system receives, or has received, cooling water, steam condensate, water treatment salts, and a wide variety of waste liquids from laboratory drains throughout the 300 Area. Prior to 1985, when administrative controls were instituted to eliminate discharges of hazardous material to the process trenches, groundwater monitoring indicates that radioactive and hazardous waste were released.

B. <u>Site Characterization</u>

Soil sample data from the process trenches have been obtained from two separate sampling events. The first sampling consisted of six composite samples obtained from the west trench. These samples were analyzed for a range of metals (DOE, 1985). More extensive sampling was implemented in 1986 (Zimmerman and Kossick 1987). The samples were taken along the trench bottoms at 100 foot intervals from depths of 0, 0.3, and 1.5 feet.

The samples were subjected to screening analyses limited to metals, gross alpha and beta, total organic halogen (TOX), and total organic carbon (TOC). Seventeen of the 66 samples were subjected to a full analysis and six surface samples were tested for extraction procedure toxicity. Six exploratory borings were drilled along the berm separating the process trenches to a maximum depth of 40 to 45 feet. Of the 48 samples taken from the borings, 9 were analyzed for a full analyses while the remainder were analyzed for the screening analyses. Several metals, including antimony, arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc were detected at elevated levels. Elevated levels of gross beta and alpha indicate the presence of radionuclides in the sediments. Based on the estimated volumes of waste constituents discharged to the process trenches, uranium is the dominant radionuclide present. Though several organic compounds were identified in the soil, only methlyene chloride and tetrachloroethylene were detected in more than one sample. In the deep borings only beryllium and mercury were identified in elevated concentrations.

Groundwater data from wells within and adjacent to 300-FF-1 indicate radionuclide contamination in the shallow aquifer (Schalla et al. 1988, Hulstrom 1989, Pacific Northwest Laboratory 1988). A plume of uranium contamination can be delineated from these data beneath the 300 Area. The highest levels of uranium are found in the areas near the process trenches with the greatest concentrations near the south end in proximity to the inlets. This is consistent with the soil concentration data showing higher concentrations of alpha towards the southern end of the trenches (Zimmerman and Kossick 1987).

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

A. Present Conditions

Current efforts for the process trenches include reduction of flow through engineering and administrative controls and the design and construction of a process treatment facility. Even with waste minimization efforts, and in consideration of the fact that the effluent stream is currently less contaminated than in the past, contaminant migration from the sediments in the trenches will continue to influence the soil column, groundwater, and Columbia River. The Columbia River is a source of recharge for the Richland water well supply and irrigation for the area. The

State of Washington has designated the section of the Columbia River, known as the Hanford reach and including the area along the Hanford 300 Area, as a Class A (excellent) surface water [WAC 173-201-080(20)]. This designation requires that the water quality be maintained for domestic, industrial, and agricultural supply, stock watering, fish migration, and fish and shellfish rearing, spawning and harvesting, wildlife habitat, recreation (including primary contact), and commerce and navigation uses [WAC 173-201-045(2)(b)].

B. Types of Substances Present

Groundwater monitoring data for the 300 Area indicate a plume of uranium contamination emanating from the process trenches in a southeasterly direction, corresponding to the direction of groundwater flow, toward the Columbia River.

Past field sampling (Zimmerman and Kossick 1987) suggest that the higher concentration of metals exist in the upper 1.5 feet of the trenches. The potential exists for further migration of these contaminants to groundwater and eventually to the Columbia River.

Another concern of the process trenches deals with the surface contamination. During regular operations effluent is discharged to one trench while the other is left to dry. The potential exists for emission of radionuclides or metals by way of fugitive dusts. This could have a direct effect on nearby workers in the 300 Area or carry directly to the Columbia River.

C. Applicable or Relevant and Appropriate Requirements

The Remedial Investigation/Feasibility Study (RI/FS) process for the 300-FF-1 Operable Unit will identify the final cleanup standards and applicable or relevant and appropriate requirements (ARARs) that will be applied during remediation.

The ERA will be conducted in accordance with 40 CFR 300, Subpart E; the Hanford Federal Facility Agreement and Consent Order (Part 3, Article XIII, Section 38); the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), the Resource Conservation and Recovery Act of 1976 (RCRA); and the State of Washington Model Toxics Control Act (Chapter 173-340 WAC (i.e., MTCA)

Interim Response Actions or ERAs conducted prior to the final cleanup actions for a site are not required to meet final cleanup standards. WAC 173-340 is an applicable ARAR, but attainment of the soil cleanup standards MTCA are not required for the EPA.

IV. PROPOSED ACTION AND ESTIMATED COSTS

Westinghouse Hanford Company (WHC), as the DOE contractor, prepared an engineering evaluation/cost analysis (EE/CA) concerning technologies that were applicable to the process trenches. An initial screening was done prior to the EE/CA to eliminate technologies that were not considered appropriate. The proposal was submitted to the EPA and Washington State Department of Ecology by DOE for review and reflects the recommendations of the regulatory agencies. The proposal was also made available for public comment for the period of 45 (45) days, however, no comments were received that impacted the expedited response action. After an initial remedial alternative selection process the following alternatives were evaluated:

A. No Action - This alternative would not mitigate the potential threat to public health and the environment.

B. Soil Removal with Disposal at the Central Waste Complex - This action involves the excavation of contaminated sediments from each trench. Excavated material would be placed in appropriate 55 gallon drums and transported to the central waste storage facility until such time that a permitted mixed waste disposal facility is available. Excavation of the material would be done using a large backhoe and a system capable of mixing and dispensing the treated sediments into individual drums.

This alternative would reduce the source of contamination in the process trenches with an estimated costs by Westinghouse Hanford Company (WHC) of $57,460,000. The major cost of this alternative is the transportation and disposal costs of the drums.

C. Soil Removal with Interim Stabilization in the North Process Pond - This option involves the excavation of the contaminated material from each trench using a large backhoe. The material would be loaded into dump trucks and hauled to the north process pond. Once the soil removal is complete, cover material would be placed over the spoils pile.
This alternative would reduce both potential environmental and public health threat through the removal of an intermediate source. The WHC estimated cost would be $2,235,600.

D. Soil Excavation and Interim Stabilization in the Process Trenches - Based on the preliminary screening and the feasibility screening and selection criteria of the EE/CA, this option was the preferred alternative. This option involved the excavation of contaminated sediments from each trench using a large backhoe. The sediments will be removed from the bottom of the trench and part way up the sides using field screening instruments to aid in determining the extent of excavation. The material will be loaded into dump trucks and hauled to the north end of the inactive trench and to the northwest lobe. When the excavation and hauling are complete in each trench, a berm of clean fill will be placed between the sediments and the active trench area. Waste minimization efforts by Westinghouse Hanford Company (WHC) for reduction of effluent discharge will allow for a reduction in the required trench length, therefore an earthen berm will suffice. Once all excavation is complete, a plastic cover will be placed over the sediments and covered with gravel. This cover will serve as a temporary barrier to minimize infiltration of precipitation and eliminate fugitive dust emissions from the contaminated spoils pile. Final remedial action for the spoils pile and process trenches will be completed as part of the 300-FF-1 operable unit.

As part of the alternative, sampling and analysis will be done. Prior to excavation, samples in the east trench will be taken in four locations at depths of 0-2, 2-4, and 4-6 feet. The west trench will have confirmatory sampling at one location in the same intervals. After excavation is complete, each trench will be sampled in the same locations.

The estimated costs done by WHC are based on 120 day project duration. The schedule and plans for implementation of this action are discussed in the Department of Energy proposal. The project cost estimate is as follows (DOE/RL-91-11 Draft B):

Implementation

Labor	$ 692,000
Materials & Supplies	$ 200,000
Analytical Services	$ 300,000
Engineering & Administration	$ 520,000
Subtotal	$1,712,000
30% Contingency	$ 513,000
Subtotal with Contingency	$2,225,600
Annual Operation/Maintenance (5 Yrs)	$ 10,000
Total	$2,235,600

V. RECOMMENDATION

This decision document represents the selected removal (Option D Section IV) action for the 316-5 Process Trenches of the DOE Hanford Site in Richland, Washington developed in accordance with CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP). This decision is based on the administrative record for this project. Because conditions at the site meet the NCP section 300.415(b)(2) criteria for action, it is recommended that the preferred alternative be approved.

If you have further questions, please contact Paul Day (509) 376-6623.

Charles E. Findley
Director
Hazardous Waste Division
U.S. Environmental
Protection Agency
Region 10

Roger Stanley
Manager
Nuclear and Mixed
Waste Program
Washington State
Department of Ecology

cc: Administrative Record

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
C. E. Findley, EPA R. Stanley, Ecology	W. W. Bixby, RL	9103432

Subject: Action Memorandum Approval: 316-5 Process Trenches, U.S. Department of Energy (DOE) Hanford Site, Richland, Washington

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att
		Correspondence Control	A3-01	X
		President's Office	B3-01	
		M. R. Adams	H4-55	
		R. J. Bliss	B3-04	
		L. C. Brown	H4-51	
		G. D. Carpenter	B2-16	
		C. K. Disibio	B3-03	
		H. D. Downey	L4-92	
		G. C. Henckel	H4-55	X
		W. L. Johnson	H4-55	X
		R. E. Lerch	B2-35	
		H. E. McGuire	B2-35	
		T. B. Veneziano	B2-35	
		T. M. Wintczak	L4-92	X
		R. D. Wojtasek	L4-92	
		EDMC	H4-22	X